

LightPath™ Imaging System

Lightpoint Medical



The first approved low light imaging and nuclear physics for intra-operative imaging of cancer

The LightPath™ Imaging System is a molecular imaging technology that has the potential to detect cancer in real-time during surgery. The technology was designed for patients with invasive breast cancer or ductal carcinoma in situ undergoing wide local excision surgery, or men with high risk non-metastatic prostate cancer undergoing a radical prostatectomy. It is used intra-operatively to generate optical images of the uptake of positron emission tomography (PET) imaging agents to help differentiate between tissue affected or unaffected by cancer, which may be helpful in assessing surgical margins.

Expertise

- Modelling
- Proof-of-Principle
- Device concepts and design
- User research
- Mechanical design
- Sensor technology
- Technology landscaping and identification
- Optics and imaging

Domain knowledge

- Medical device regulation
- New technology application
- Surgical environment
- Commercially viable solutions



Our client asked:

Lightpoint's vision conceived moving existing PET radiopharmaceuticals from diagnostics to intraoperative imaging and pathology with the LightPath™ Imaging System.

The project story:

Although the science behind the LightPath™ system has been known for many years, this is the first time that it's been utilised in this way.

The Sagentia Innovation team began by modelling relative performance of approaches. We performed early proof-of-principle demonstrations which informed later design.

To assure good system usability we collaborated with medical research teams for in-vitro testing and proposed commercially viable solutions for the operating theatre and pathology lab.

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Results: deliverables and outcomes

- The world's first intra-operative molecular imaging system to help surgeons ensure they have removed all cancerous tissue in a single operation
- The system detects Cerenkov Radiation and Positrons (equivalent to seeing a 3mW LED at 15km). Identified detector technologies for Cerenkov Radiation and Positrons – equivalent to seeing a 3mW LED at 15km
- The technology provides the potential for optical imaging of numerous cancer types
- A sensor with increased sensitivity has been discovered
- The medical device concepts have enabled further investment
- The technology has obtained CE Mark approval
- The product won 'new product of the year' award at 2016 BEEAs and was launched in the US in 2016